



AgConnections

AGRICULTURAL SAFETY AND HEALTH

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NIOSH Agricultural Research Centers Update for Winter, 2003



From a Center Director's Point of View

Writing for this inaugural issue of the National Agriculture Center Newsletter is a bit like preaching to the choir. Many of you have been instrumental in exploring the health and safety problems that exist in agriculture. NIOSH deserves major credit as an institution for recognizing a need, and organizing a program initiative to address that need.

Remarkably, the Centers and their leadership have come together in a collegial fashion rarely seen in science. There has been a level of comradeship and collaboration not typical of research endeavors at multiple institutions. My perspective over the years—first as Deputy Director of the SE Center and as Director of the SW Center, plus interactions with many colleagues from other centers, their collaborators, and NIOSH, has convinced me that such unselfish science can take place for the ultimate

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On behalf of the National Institute for Occupational Safety and Health (NIOSH), I am pleased to welcome you to the inaugural issue of *AgConnections*, a newsletter dedicated to disseminating information about the NIOSH Centers for Agricultural Disease and Injury Research, Education, and Prevention. This newsletter will provide an informative resource for the NIOSH Agricultural Centers' program that began in 1990.

In that year, under Public Law 101-517, NIOSH received Federal appropriations to undertake a National Program in Agricultural Safety and Health that included research, surveillance, and intervention initiatives that "...when sustained over a period of time will have a significant and measurable impact on ...health effects among rural Americans." In addition to funding the Surgeon General's Conference on Agricultural Safety and Health, the establishment of centers for agricultural occupational safety and health was specifically addressed.

The blessing of abundant agricultural products in the United States also provides challenges for safety and health professionals because of the immense diversity of farming practices and equipment needed to produce our country's food and fiber. NIOSH recognized that the health and

safety of those who work within these significantly different regions would be served best by a network of Agricultural Centers that work not only locally, but which develop a regional character. From the

beginning, with the establishment of the first two Agricultural Centers at Davis, California and at Iowa City, Iowa, this regional presence has developed. Today, eight additional Centers join those two pioneers for a total of 10 Centers: Seattle, Washington; Fort Collins, Colorado; Tyler, Texas; Marshfield, Wisconsin; Lexington,

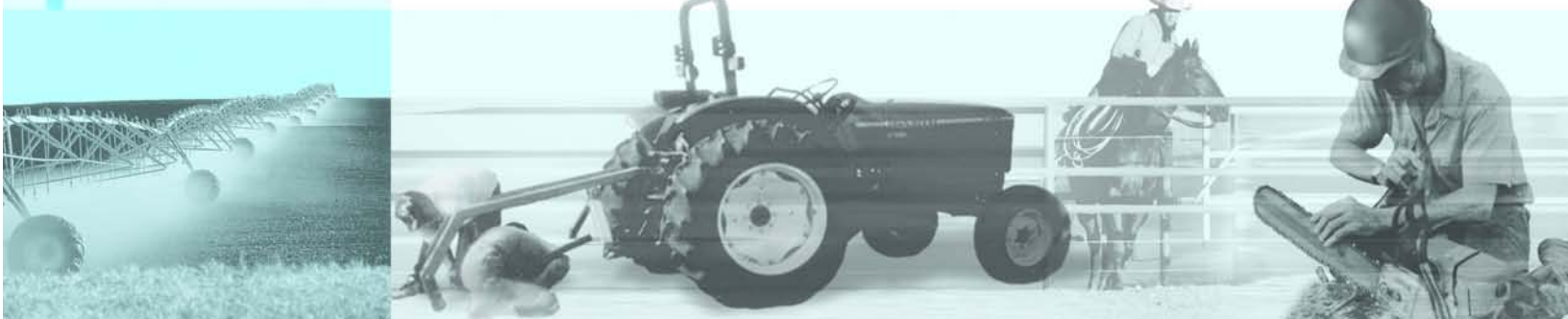
Kentucky; Columbus, Ohio; Cooperstown, New York, and Greenville, North Carolina.

Over the years, the Agricultural Centers pursued research, education, and outreach related to a wide variety of significant issues in agricultural safety and health, and results from their work continue to be translated into educational, intervention and prevention activities, with the ultimate goal of improving the health and well-being of all agricultural workers and their families. The Agricultural Centers' program remains the flagship of the NIOSH National Program, and we look forward to continued excellence in their programs.

Steve Olenchock, Ph.D. is the Senior Scientist for Agriculture NIOSH



Steve Olenchock, Ph.D.





(in 1997) in agricultural products to stay in business.

Despite the growth in population and increased demand for agricultural products, supply sources and individuals engaged in agriculture have declined worldwide.

The U.S. has experienced a relatively steady trend in decrease in the number, but increase in size of farms since the end of World War II. Acreage of land in farms has decreased by more than 55 million acres in the last 15 years yet productivity per acre has increased. New production methods have changed how farm work is organized, how food and fiber are produced, as well as the structure of the demands of farm labor. For example, recent developments in production agriculture include factory-like livestock facilities and tenant farming where the farmer is a temporary contract grower/producer rather than the primary landowner. The 1997 U.S. Census of Agriculture reports that 18% of U.S. farms produce more than 87% of the agricultural products. Farms that rely on major food distribution companies for their sales need to produce and sell approximately \$250,000

The economics of modern agriculture have also changed the nature of the workforce. Within nuclear farm families, it is likely that one spouse will work full-time off the farm. Older children will be expected to contribute to the operation.

A decreasing proportion of children choose to continue family farming and the average age of farm owner/operator is increasing. This decrease in the availability of family labor has generated an increased demand for non-family, farm labor. Hired workers—traditionally migrant farm workers following crop streams—are increasingly “settling” out to work in both agriculture (including forestry, nursery, and processing operations), as well as non-agricultural enterprises.

There were 1.22 million hired workers on the Nation’s farms and ranches in October, 2001 as reported by the National

Agricultural Statistics Service, USDA. There were 959,000 workers hired directly by farm operators. Agricultural service employees on farms and ranches made up the balance of hired workers. Migrant workers accounted for 12.1 percent of the October 2002 hired force compared with 11.3% in October 2001.

While we primarily associate agriculture with farming/ranching, the U.S. Department of Labor includes forestry and fishing occupations when reporting employment, and injury information.

	1997	1982	%Change
Number of Farms	1,911,859	2,240,976	-14.7%
Land in farms-acres	931,795,255	986,796,579	-5.6%
Ave. Sales per farm	\$102,970	\$58,858	74.9%
Ave. age of principal owner/operator	54.3	50.2	7.5%
% of Farms by value of gross sales			
<\$10,000	50.45%	48.9%	1.5%
\$10,000-\$99,999	31.5%	37.5%	-6.0%
\$100,000-\$249,000	9.9%	9.6%	.3%
\$250,000 +	8.2%	3.9%	4.3%

National Agricultural Statistics Service,
U.S. Dept. of Agriculture, (1999)
<http://www.nass.usda.gov/census>

Work Hazards

Occupational injury and disease risks associated with agriculture make it one of the most hazardous of industries. Health and injury risk exposures can be attributed to animals, machinery, work environment, and chemicals. The U.S. Department of Labor reported 740 job-related fatalities in the agriculture/forestry/ fishing industrial classification codes for the year 2001. In addition, data collected through the Traumatic Injury Surveillance of Farmers (TISF) survey project conducted by the National Institute for Occupational Safety and Health (NIOSH) reported 195,825 lost-time work injuries on U.S. farms in 1995. Farm operators and their family members accounted for most of the injuries (63.8%). Of the estimated 59,888 injuries among hired workers, Hispanics accounted for 51.9%, with 25% of the injuries occurring to workers on beef, hog, or sheep operations.

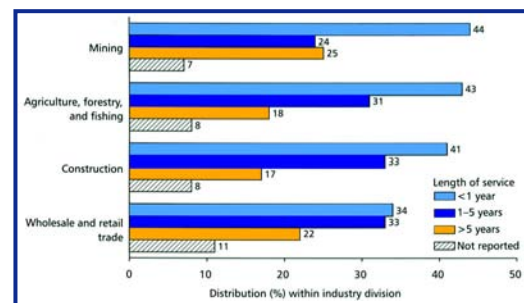
Agricultural workers are also at risk for chronic health problems associated with work exposures. These health problems include: lung disease, joint and back problems associated with work ergonomics, hearing loss, and skin problems.

Youth in Agriculture

Children who live on or visit farms are exposed to unique hazards and injury as a result of developmental immaturity, lack of experience, and failure to recognize injury risk.

In 1998, an estimated 1.2 million youth under age 20 lived on farms. An additional 666,500 youth who did not live on farms were directly hired to do farm labor. An estimated 104 children younger than age 20 die of agricultural injuries on U.S. farms/ranches annually. About 32,800 agriculture-related injuries occurred to children or adolescents under the age of 20 who lived on, worked on, or visited a farm in 1998. Fifty-two percent of all work-related fatalities to children occur during crop production.

However, livestock operations accounted for the most injuries (52%) to children. Among children less than age 16, 64% of work-related deaths occur to children working on family owned farms. Farm machinery is the leading cause of death, accounting for 36% of deaths to youth younger than 20 years old. Imperfect reporting, lack of work history, reluctance to seek medical attention, and the lack of access to medical care are among the reasons that injuries and health problems arising from agricultural work are believed to be under-reported.



Distribution of nonfatal injuries and illnesses involving days away from work, 1997 (Source: SOII (1999))

Center Projects

The NIOSH sponsored agriculture safety and health research centers engage in research, intervention/prevention, and education/outreach projects designed to respond to regional priorities, investigate issues with potential worker safety/health impact, and document effectiveness of measures to reduce risks and prevent injuries and disease among the agricultural worker population.

Research Related to Workforce Issues

GREAT LAKES CENTER

- Farm-related Asthma

GREAT PLAINS CENTER

- Keokuk County Rural Health Study: The Epidemiology of Disease & Injuries
- New Methods for Evaluation of Organic Dust Aerosols*

HIGH PLAINS CENTER

- ROPS Design & Testing for Tractors/Other Ag Vehicles
- Agricultural Health & Safety Curriculum Evaluation
- New Methods for Evaluation of Organic Dust Aerosols*

* Cross-center Project

MIDWEST CENTER CENTER

- Pesticides, Genetics & Risk of Parkinson's Disease

NORTHEAST CENTER

- Stability Data for Safe Tractor Operation
- The Hispanic Workforce in Northeastern Dairy
- Confined Space Manure Storage Ventilation Standards

PACIFIC NORTHWEST CENTER

- Identification & Prevention of Injuries in Northwest Orchards
- Workplace Determinants of Take Home Pesticide Exposure



SOUTHEAST CENTER

- Improving Surveillance of Pesticide and Other Agricultural-Related Poisonings in Kentucky and Tennessee
- Cost Effectiveness of Promoting ROPS & Seat Belts on Family Farm Tractors
- Farmer Suicides: A Ten-year Analysis in Three Southern States

SOUTHERN COASTAL CENTER

- Human Metabolism of New and Emerging Pesticides
- Ergonomic Interventions for the Agricultural Industry

SOUTHWEST CENTER

- A Study of Work Injuries in Farmworker Children
- Reporter Gene Systems to Detect Endocrine Disruptive Chemicals

WESTERN CENTER

- Incident Injury & Disease Among a Cohort of CA Farmers
- Developing, Improving, and Applying Cost-Effective & Accurate Human Blood Cholinesterase Determinations
- Health Effects of Ambient Airborne Particles for the Sacramento/San Joaquin Valley
- Current Costs of Occupational Injuries in Agriculture
- Safety Education and Ag Injury Among CA Rural High School Students

Director's Point of View

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benefit of our target population, those working in agriculture.

In the dozen years since the inception of the NIOSH Agricultural Initiative, the scope of projects has evolved from traditional research to social/behavioral interventions and prevention education to prevent agricultural injuries and illness. Evaluation methods are now being applied. We need to show that our activities do, in fact, make a difference; that we save lives and prevent injuries. We know that to be effective, chronic exposures must be documented prospectively, interventions must be tracked over time in relation to the intended objectives, and educational activities must be repeated. This requires a long-term commitment from NIOSH to maintain the Agricultural Research Centers. As a former Center Director I can appreciate the continuing leadership role of NIOSH in support of all the Ag Centers as we launch this new National Newsletter, which I hope will become a useful vehicle to share meaningful information about both our collective successes, as well as failures, over time. The Centers are now well rooted, evolving, and continue to face a challenging future.

Arthur L. Frank, M.D., Ph.D.
Drexel University
School of Public Health

LOGGING IN VALUABLE RESOURCES

This is not meant to be an all-inclusive listing. Suggestions for websites, videos, books, and articles related to agricultural health and safety are invited.

WEBSITES

Occupational Safety and Health:

<http://www.cdc.gov/niosh>
<http://www-oem.ucdavis.edu>
<http://pasture.ecn.purdue/~agsafety>
<http://www.bae.umn.edu>

Agricultural workers:

<http://www.cdc.gov/niosh>
<http://www.cdc.gov/nasd>
<http://www.rwhp.org>
<http://ncfh.org>
<http://www.bls.gov/opub>
<http://www.nass.usda.gov>
<http://research.marshfieldclinic.org/children/resources>

Great Lakes Center for Agricultural Safety and Health
 Ohio State University
 590 Woody Hays Drive
 Columbus, OH 43210
 (614) 292-9455
 Center Director: Thomas Bean, EdD

Great Plains Center for Agricultural Health
 100 Oakdale Campus, #124 AMRF
 The University of Iowa
 Iowa City, IA 52242-5000
 (319) 335-4887
 Center Director: Wayne Sanderson, PhD, CIH

High Plains Intermountain Center for Agricultural Health & Safety
 154 B Environmental Health Bldg.
 Colorado State University
 Fort Collins, CO 80523-1681
 (970) 491-6151
 Center Director: Steve Reynolds, PhD, CIH

Midwest Center for Agricultural Research, Education & Disease & Injury Prevention
 National Farm Medicine Center
 1000 North Oak Avenue
 Marshfield, WI 54449-5790
 (715) 389-4012
 Center Director: Anne Greenlee, PhD

Northeast Center for Agricultural Safety & Health
 One Atwell Road
 Cooperstown, NY 13326
 (607) 547-6023
 Center Director: John May, MD

Pacific Northwest Agricultural Safety & Health Center
 Department of Environmental Health
 Box 357234
 University of Washington
 Seattle, WA 98154-1452
 Center Director: Richard Fenske, PhD, MPH

Southeast Center for Agricultural Health and Injury Prevention
 Department of Preventive Medicine
 University of Kentucky
 1141 Red Mile Road, Suite 102
 Lexington, KY 40504-9842
 (859) 323-6836
 Center Director: Robert McKnight, MPH, ScD

Southern Coastal Agromedicine Center
 East Carolina University
 West Research Bldg., 1157 VOA Site C Road
 Greenville, NC 27858
 (252) 744-1000
 Center Director: Susan S. Gustke, MD

Southwest Center for Agricultural Health, Injury Prevention, & Education—The University of Texas Health Center at Tyler
 11937 U. S. Hwy. 271
 Tyler, TX 75708-3154
 (903) 877-5896
 Center Director: Jeffrey L. Levin, MD, MSPH

Western Center for Agricultural Health & Safety
 University of California
 One Shields Avenue
 Davis, CA 95616
 (530) 752-4050
 Center Director: Marc Schenker, MD, MPH

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 Teri Palermo, RN

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International collaboration is the hallmark of the upcoming conference: Future of Rural Peoples, the 5th International Symposium hosted by the Institute of Agricultural Rural and Environmental Health, Saskatoon, Saskatchewan, Canada October 19-23, 2003. With profound changes affecting the very survival of rural people, this conference seeks to connect knowledge and past experience in new ways to understand the future of rural peoples. The Symposium is intended to be inclusive of all rural settings – those in industrialized countries as well as those in emerging or subsistence economies. Both scientific/technical and non-technical abstracts are invited for presentations that address four major themes:

- **Rural Economy**
- **Environment**
- **Healthy People**
- **Rural Communities**

Abstract Deadline: April 2, 2003

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